

LATE REVISIONS
UNIVERSITY OF CALIFORNIA, DAVIS (UC DAVIS)
MAIN WASTEWATER TREATMENT PLANT (WWTP)
YOLO COUNTY
Proposed Tentative Waste Discharge Requirements
Regional Water Quality Control Board, Central Valley Region
Board Meeting – 5 December 2008
ITEM # 22

1. Add the following language in the NPDES permit, Section II, Findings:
 - R. **Salinity Limitations.** This Order contains interim effluent limitations for Electrical Conductivity (EC) and Total Dissolved Solids that ~~are~~ is-to remain in effect for the term of the Order. This Order requires the Discharger to study appropriate EC levels to protect agricultural beneficial use in areas irrigated with water from the Putah Creek diverted downstream from the discharges. A final EC effluent limitation will be included in the subsequent renewal of this Order when site-specific water quality and agriculture-related information is available.
2. Make the following change in the NPDES permit, Section IV.A.1.h:
 - h. **Chronic Whole Effluent Toxicity.** ~~The effluent discharge shall not cause chronic toxicity in the receiving water.~~ There shall be no chronic toxicity in the effluent discharge.
3. Make the following change in the NPDES permit, Section IV.A.2, Interim Effluent Limitations:
 - a. **Electrical Conductivity.** Effective immediately, the effluent electrical conductivity shall not exceed 1,400 μ mhos/cm as a monthly average. This performance-based effluent limitation shall remain in effect until the Regional Water Board establishes final effluent limitations based on the Salinity/EC Site-Specific Study required in Special Provisions VI.C.2.c.
 - b. **Total Dissolved Solids.** Effective immediately, the effluent total dissolved solids mass loading shall not exceed 536,100 pounds/month. This performance-based effluent limitation shall remain in effect until the Regional Water Board establishes final effluent limitations based on the Salinity/EC Site-Specific Study required in Special Provisions VI.C.2.c.
 - ~~b. c.~~ **Mercury, Total.** The total annual mass discharge of total mercury shall not exceed 0.10 pounds. This interim performance-base effluent limitation shall be in effect until the Regional Water Board establishes final effluent limitations after adoption of the Sacramento-San Joaquin Delta Methylmercury TMDL.

4. Add the following language in the NPDES permit, Section VII:

F. **Mass Effluent Limitations.** Compliance with the mass effluent limitations, with the exception of the Total Dissolved Solids mass limitation in Section VI.A.2.b, will only be determine during average dry weather periods when groundwater is at or near normal and runoff is not occurring.

H. **Chronic Whole Effluent Toxicity Effluent Limitation.** Compliance with the accelerated monitoring and TRE/TIE provisions of Provision VI.C.2.a shall constitute compliance with effluent limitation IV.A.1.h for chronic whole effluent toxicity.

5. Add the following language in the Fact Sheet, Section IV.C.2.b, Hardness, Sixth and Seventh Paragraph

For those contaminants where the regulatory criteria exhibit a concave downward relationship as a function of hardness, use of the lowest recorded effluent hardness as a representation of the downstream receiving water hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. Use of the lowest recorded effluent hardness as receiving water hardness is also protective under all possible mixing conditions between the effluent and the receiving water (i.e., from high dilution to no dilution). Therefore, for cadmium (chronic), chromium (III), copper, nickel, and zinc, the reasonable worst-case ambient hardness can be estimated by using the lowest effluent hardness. The water quality criteria for these metals were calculated for this Order using Equation 1 and a reported minimum effluent hardness of 160 mg/L as CaCO₃, based on 57 samples obtained by the Discharger between January 2004 and May 2007.

For those metals where the regulatory criteria exhibit a concave upward relationship as a function of hardness, water quality objectives based on either the effluent hardness or the receiving water hardness alone, would not be protective under all mixing scenarios. Instead, both the use of the hardness of the upstream receiving water and the effluent is ~~required to determine~~ used to represent the reasonable worst-case ambient hardness. In this case, using the lowest upstream receiving water hardness in Equation 2, below, is protective if the effluent hardness is ALWAYS higher than the receiving water hardness. Under circumstances where the effluent hardness is not ALWAYS higher than the receiving water hardness, it may be appropriate to use the highest reported upstream receiving water hardness in Equation 2. The following equation provides fully protective water quality criteria for those metals that exhibit a concave upward relationship.

6. Add the following language in the Fact Sheet, Section IV.D.3. Satisfaction of Antibacksliding Requirements:

iv. Electrical Conductivity (EC). Order No. R5-2003-0003, Amendment No. 1 required that the Discharger meet the final average monthly effluent limitation of 900 $\mu\text{mhos/cm}$ for electrical conductivity, based on the lowest recommended salinity levels (secondary maximum contaminant levels) for municipal and domestic water supply. ~~The circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and the Discharger was never able to comply consistently with the existing limitation despite properly operating its treatment facilities and implementing required source controls.~~ There is also new information ~~now~~ regarding available indicating the salinity levels in the receiving water, including the existing discharge, are below the 900 $\mu\text{mhos/cm}$ monthly standard; this information was ~~the salinity issues for the Facility that was not available at the time the previous permit was developed.~~ The Discharger has conducted several studies to identify and minimize salinity sources and has found that it will be necessary to change water supplies to meet the existing limitation, which could take many years to accomplish. This Order establishes an interim Total Dissolved Solids mass limitation based on existing regulated flow to prevent increases to the existing salt loading to the receiving water, and an interim monthly average EC limit of 1400 $\mu\text{mhos/cm}$. These interim limits will be replaced with final limits that protect agricultural beneficial uses. Removal of the 900 $\mu\text{mhos/cm}$ EC limit is consistent with antidegradation requirements. Removal of the limit is therefore allowed under CWA sections 303(d)(4) and 402(o)(2)(B)(i) and (E).

7. Add the following changes in the Fact Sheet, Section IV.D.4. Table F-10, Summary of Final Effluent Limitations, Discharge Points No. 001 and No. 002:

⁹ The effluent shall not cause or contribute to chronic toxicity in the receiving water. There shall be no chronic toxicity in the effluent discharge.

8. Add the following changes in the Fact Sheet, Section IV..E Interim Effluent Limitations:

1. **Conductivity (EC).** The interim limitations for EC in this Order are based on the current treatment plant performance. In developing the interim limitation for EC, the highest running monthly average was taken from 1,598 data points.

Table F-11 summarizes the calculations of the interim effluent limitation for EC.

Table F-11. Interim Effluent Limitation Calculation Summary

Parameter	Units	MEC	Mean	Maximum 30-Day Running Average	# of Samples	Interim Limitation
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Electrical Conductivity (EC)	µmhos/cm	1,679	1,091	1,400	1,598	1,400
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2. **Total Dissolved Solids.** Effective immediately, the effluent total dissolved solids mass loading shall not exceed 536,100 pounds/month. This performance-based effluent mass limitation is calculated as follows:

$$\begin{aligned} \text{Mass Limitation} &= \frac{(99^{\text{th}} \text{ Percentile TDS Concentration Observed of } 782.7 \text{ mg/L}) \times (\text{Regulated Flow of } 2.7 \text{ MGD}) \times (8.34 \text{ Conversion Factor}^1) \times (365 \text{ days per year})}{(12 \text{ months per year})} \\ &= 536,100 \text{ pounds per month} \end{aligned}$$

¹ Conversion Factor for Pounds per Day = (Flow in 10⁶ gallons/day) x (Pollutant Concentration in 10⁻³ grams per liter) x (3.7854 liters /gallons) (1 pound/ 454 grams) = 8.34 pounds per day)

- 2.3. **Mercury, Total.** The interim limitations for mercury in this Order are based on the current treatment plant performance. In developing the interim limitation for mercury, the highest observed effluent mercury data and average dry weather flow were used and converted to a mass limit. The total annual mass loading for total mercury shall not exceed 0.10 pounds.
9. Add the following language In the Fact Sheet, Section IV.C.3.v, Salinity Effluent Limitations, third paragraph:

The Antidegradation Policy (Resolution No. 68-16) requires that the Discharger implement best practicable treatment or control (BPTC) of its discharge. For salinity, the Regional Water Board is considering limiting effluent salinity of municipal wastewater treatment plants to an increment of 500 µmhos/cm over the salinity of the municipal water supply as representing BPTC, or based on the results of a site-specific receiving water study. This Order includes an interim performance-based monthly EC effluent limitation of 1,400 µmhos/cm for EC and an interim monthly TDS mass limitation of 536,100 pounds per month, based on the existing regulated flow of 2.7 mgd, to protect the receiving water from further salinity degradation, but no final effluent limitation because sufficient site-specific information does not exist. Final effluent limitations for salinity based on BPTC, and site-specific salinity levels necessary to support beneficial uses, will be established subsequent to the collection and analysis by the Discharger of EC in the Discharger's water supply and beneficial uses of the receiving streams. This Order requires quarterly monitoring of EC and TDS of the Discharger's water supply (see Attachment E, Section IX.A).